VERNOV, S.N.; GRIGOR'YEV, N.L.; IVANENKO, I.P.; LEBEDINSKIY, A.I.; MURZIN, V.S.; CHUDAKOV, A.Ye.

Possible formation mechanism of "terrestial corpuscular radiation" induced by cosmic rays. Dokl. AN SSSR 124 no.5:1022-1025 F '59.
(MIRA 12:3)

1.Chlen-korrespondent AN S.S.S.R. (for Vernov). 2. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
(Cosmic rays) (Particles, Elementary)

MURZIN, V.S.

3.2410

S/058/61/000/010/017/100
A001/A101

AUTHORS: Grigorov, N.L., Guseva, V.V., Dobrotin, N.A., Lebedev, A.M., Kotel'-nikov, K.A., Murzin, V.S., Rappoport, P.D., Ryabikov, S.V., Slava-tinskiy, S.A.

TITLE: Studying nucleon-nucleon interactions at $\sim 2 \times 10^{11}$ ev energies

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 96, abstract 10B501 ("Tr. Mezhdunar. konferentsii po kosmich. lucham, 1959, v. 1", Mos-cow, AN SSSR, 1960, 140 - 153)

TEXT: The authors present the results of an investigation, by means of the "calorimetric" method, of nucleon-nucleon interactions at energies of $\sim 2 \times 10^{11}$ ev, conducted at Pamir (3,860 m above sea level). They describe the equip-ment for determining the energy of primary particles, energy distribution of secondary particles, inelasticity coefficient, and present data on correlated pairs, angular distributions of particles in individual interactions, and con-sider in detail symmetric and non-symmetric showers.

L. Dorman

[Abstracter's note: Complete translation]

Card 1/1

3

S/058/61/000/010/020/100
A001/A101

AUTHORS: Babayan, Kh.P., Grigorov, N.L., Dubrovin, M.M., Mishchenko, L.G.,
             Murzin, V.S., Sarycheva, L.I., Sobinyakov, V.A., Rappoport, I.D.

TITLE: Investigation of interaction of $10^{11} - 10^{12}$ ev energetic particles
             with nuclei of iron and graphite

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 96-97, abstract 10B506
             ("Tr. Mezhdunar. konferentsii po kosmich. lucham, 1959, v. 1", Mos-
             cow, AN SSSR, 1960, 176 - 182)

TEXT: The authors present the results of an investigation, carried out by
means of an ionization calorimeter, of interactions of 10^{11}-10^{12} ev particles
with nuclei of iron and graphite on the Aragats mountain (3,200 m above sea level).
It is shown that: 1) Coefficient of inelasticity of interaction of particles
with energy $E_0 \geqslant 2 \times 10^{11}$ ev with iron nuclei $\alpha_{Fe} = 1.0 \pm 0.09$; 2) In the inter-
action with the iron nucleus of a 2×10^{11} ev nucleon, one energetically outstand-
ing particle is produced with average energy of $\sim E_0$, probability of this occur-
rence being close to unity; most probable this particle is a π-meson; 3) The
mean coefficient of inelasticity of interactions of particles with $E_0 \geqslant 10^{11}$ ev

Card 1/2

Investigation of interaction ...

$S/058/61/000/010/020/100$
$A001/A101$

with carbon nuclei $\bar{\alpha}_c \leq 0.5 \bar{\alpha}_{Fe}$; 4) the experimental data obtained for $\bar{\alpha}_{Fe}$ and $\alpha_c/\alpha_{Fe} \leq 0.5$ rule out the possibility of consecutive collisions with individual nucleons of the nucleus (or small groups of nucleons) at interactions of particles with energies $\geq 10^{11}$ ev with heavy nuclei; 5) in the energy range of nucleons $10^{10} - 10^{11}$ ev the interaction with heavy nuclei changes its nature.

L. Dorman

[Abstracter's note: Complete translation]

Card 2/2

MURZIN, V. S.

The Production of the Electron-Photon Component in the Collisions of nucleions with Nuclei.

Report submitted for the 8th Intl. Conf. on Cosmic Rays (IUPAP), Jaipur, India, 2-14 Dec 1963.

L 13623-63   EWT(m)/BDS AFFTC/ASD   S/0056/63/044/006/1806/1810 58
ACCESSION NR: AP3003101   57

AUTHOR: Grigorov, N. L.; Yerofeyeva, I. N.; Murzin, V. S.; Mishchenko, L. G.;
Rapoport, I. D.; Rostomyan, B. O.; Sobinyakov, V. A.; Titenkov, A. F.

TITLE: Energy spectrum of nuclear-active particles at 3260 m above sea level

SOURCE: Zhurnal eksper. i teor. fiziki, v. 44, no. 6, 1963, 1806-1810

TOPIC TAGS: nuclear-active particle spectrum, high energy atomic interactions

ABSTRACT: The energy spectrum of nuclear-active particles at 3260 m above sea
level was studied with an ionization calorimeter. The possible distortion of
the spectrum by instrumental effects was reduced by adding the ionization in the
ten upper rows of chambers. The effect of incidence of groups of nuclear-active
particles on the array was avoided by selecting only those events in which one
particle strikes the array. Simultaneous passage of several particles through
the apparatus was excluded by considering only the events due to nuclear particles
without accompaniment in air. A total of 351 events was found in which a sharply
delimited core of an electron-nuclear shower was visible in the calorimeter, and
the integral energy spectrum of the nuclear-active particles was plotted. In the

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ACCESSION NR: AP3003101

energy range between 200 and 2000 GeV the integral energy spectrum can be
approximated by a power law with exponent 1.92, with a statistical error of
5--7% and with a methodological uncertainty of 0.05. It is concluded that
in this energy range the exponents of the nuclear-active particle spectrum,
the spectrum of bursts from single nuclear-active particles in ionization
chambers, and of the energy spectrum of electron-photon cascades produced in
nuclear interactions coincide, meaning that the mean inelasticity factor in
nuclear interactions remains constant in the energy range under consideration.
Orig. art. has: 4 figures and one formula.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta
(Institute of Nuclear Physics, Moscow State University)

SUBMITTED: 08Jan63   DATE ACQ: 23Jul63   ENCL: 02

SUB CODE: 00   NO REF SOV: 003   OTHER: 002

Card 2/2

MURZIN, V.S.

Generation of the electron-photon component in nucleon-
nucleus collisions. Izv. AN SSSR. Ser. fiz. 28 no.11:
1790-1793 N '64.   (MIRA 17.11)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo
gosudarstvennogo universiteta.

ALEKSEYEVA, K.I., CRITCHOT, N.I., ..., M.SHCHENKO ...
MUKHIN, V.S., PANKORT, ..., ..., ...
TITENKOV, A.F.

Nuclear-active ... ... particle... ... ...
the characteristics of their ... ...
Izv. AN SSSR. Ser. fiz. 28 no.11 ... 1957 N ...

1. Nauchno-issledovatel'skiy ... ... yadernoy ... ...
gosudarstvennogo ... ...

GRIGOROV, N.L.; YEROFEYEVA, I.N.; MISHCHENKO, L.G.; MURZIN, V.S.;
    RAPOPORTM I.D.; SARYCHEVA, L.I.; SOBINYAKOV, V.A.

Interaction paths of nuclear-active particles with energies
$\gg 10^{11}$ev. Izv. AN SSSR. Ser. fiz. 28 no.11:1798-1800 N '64.

Absolute intensity and the energy spectrum of nuclear-active
particles at an altitude of 3260 m. above sea level.
Ibid.:1801-1802   (MIRA 17:12)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki
Moskovskogo gosudarstvennogo universiteta.

MURZIN, V.S.; RAPOPORT, I.D.

Study of electron-photon showers in iron. Zhur. eksp. i
teor. fiz. 47 no.1:3-6 Jl '64.   (MIRA 17:9)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo
universiteta.

L 4478-66   EWT(l)/EWT(m)/FCC/T/EWA(h)   IJP(c)   GW

ACC NR: AP5024623   SOURCE CODE: UR/0048/65/029/009/1644/1647

AUTHOR: Murzin, V.S.   33
                                                                        03
ORG: none

TITLE: Influence of errors in determining the primary energy on the results of measurements of different characteristics of nuclear interactions in cosmic rays /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 9, 1965, 1644-1647

TOPIC TAGS: primary cosmic ray, nucleon interaction, inelastic interaction, particle production, energy distribution, error statistics

ABSTRACT: Unbiased statistical errors in the measurement of the energies of individual primary particles lead to biased errors in the determination of different characteristics of nuclear interactions in cosmic rays because of the nonlinear energy dependence of these characteristics and power-law energy spectrum of the primaries. The author calculates this effect in the determination of the energy spectrum of the primaries and the energy dependences of the inelasticity and multiplicity of nucleon-nucleon interactions, on the assumption that the experimental error in the logarithm of the primary energy is normally distributed. The experimental error in the determination of primary energies by the method of G. Castagnoli et al. (Nuovo cimento, 10,

Card 1/2   00010339

L 4478-66

ACC NR: AP5024623

1539, 1953) is estimated and experimental data on the primary energy spectrum and the energy dependences of the inelasticity and multiplicity are discussed. It is concluded that the experimental data are consistent with an energy independent inelasticity and a multiplicity that is proportional to the fourth root of the energy and that does not become energy independent at energies above 10^{12} eV as suggested by P. Malhotra (Nucl. Phys., 46, 559, 1963). Orig. art. has: 9 formulas and 3 figures.

SUB CODE: NP/ SUBM DATE: 00/   ORIG REF: 003/ OTH REF: 007

Card 2/3

L 27897-66   EWT(m)/FCC/T   IJP(c)

ACC NR: AP5024642   SOURCE CODE: UR/0048/65/029/009/1719/1721

AUTHOR: Babayev, M.K.; Denikayev, R.Z.; Yemel'yanov, Yu. A.; Zhukov, Ye. I.; Lukin,
Yu. T.; Murzin, V.S.; Khomenko, G.S.

ORG: none

TITLE: Fluctuation in the number of particles in an electromagnetic shower at 110
BeV /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August
1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 9, 1965, 1719-1721

TOPIC TAGS: secondary cosmic ray, cosmic ray shower, electron, photon, iron

ABSTRACT: Electron-photon showers were investigated in an ionization calorimeter con-
sisting of the following components in order from the top: 13 cm C, 3 cm Fe, 8 trays
of ionization chambers each followed by 5 cm Fe, 2 trays of chambers with no absorber
between, 1 cm Fe, 160 g/cm² C, 3 cm Pb, and two trays of chambers separated and fol-
lowed by 2 cm Pb. Showers initiated by cosmic ray particles were regarded as electron-
photon showers if they produced ionization in at least one of the two uppermost trays
and no ionization in the two trays beneath the large carbon absorber. Of 334 electron-
photon showers thus identified, 152 had energies between 100 and 200 BeV. The ioniza-
tion versus depth curves for these showers were normalized to a primary energy of 110

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L 27897-66

ACC NR: AP5024642   0

BeV and averaged, and the average curve was compared with theoretical curves calcula-
ted for different assumed values of the radiation length in iron. Good agreement was
obtained with the curve based on a radiation length of 12.6 g/cm^2. This value of the
radiation length in iron was confirmed by comparing the observed depth of maximum
shower development with calculated values. The fluctuation (ratio of the mean square
to the square of the mean) in the number of particles in the showers as a function of
depth was compared with the calculated curve of N.M.Gerasimova (Zh. eksperim. i teor.
fiz., 43, 500 (1962); 44, 240 (1963)). Good agreement was found at depths less than
23 radiation units, but at greater depths the observed fluctuations were much less
than the calculated ones. In conclusion, the authors express their gratitude to Zh.S.
Takibayev for valuable discussions. Orig. art. has: 1 formula, 3 figures, and 1 table.

SUB CODE: NP/ SUBM DATE: 00/   ORIG REF: 004/ OTH REF: 000

Card 3/3

VOVK, I.N.; MURZIN, V.V.

Deep drilling of automobile valves made of heat resistant steel.
Avt.prom. 27 no.6:40-41 Je '61.   (MIRA 14:6)

1. Chelyabinskiy nauchno-issledovatel'skiy institut tekhnologii
mashinostroyeniya (NIITEKHMASH).
                    (Aubomobiles--Engines--Valves)
                    (Drilling and boring machinery)

MIRZIN, Yu. M. , Cand ,ech Sci -- (diss) "Study of the
state of isolation and problems of exploitation sourity
of electrical equipment for underground mining (On the
example of the mines of "Moskvougol'" & Combine)."

Mos, 1 55, 18 pp (Min of Higner Education USSk. Mos

Mining Inst im I.V. Stalin. Chair of Mining Electroengineering)

110 cc ies (KL, 23-5b, 107)

- 73 -

MURZIN, Yu.M., kand.tekhn.nauk

       Quick-acting leakage prevention in mine electric networks. Bezop.
       truda v prom. 6 no.3:23 Mr '62.   (MIRA 15:3)
              (Electricity in mining--Safety measures)

MURZIN, Yu.M., kand. tekhn. nauk

Features of the operation of a full-wave rectifier in a charge network with a ballast resistor. Nauch. soob. IGD 15: 166-169 '62.

(MIRA 17:2)

MIKHEYEV, Yu.A.; SYCHEV, L.I. [illegible] otnastiye NORCH, [illegible];
        OSTAPENKO, V.A., kand. tekhn. nauk, retsenzent; [illegible],
        Ye.I., ved. red.

        [Electric networks in mining enterprises] Elektricheskie se-
        ti gornykh predpriiatii. Moskva, Nedra, 1964. [illegible].

NEMIROVICH-DANCHENKO, M.M.; MURZINA, A.I.

Fractional composition of antiencephalitic horse serum.
Trudy TomNIIVS 14:242-244 '63.   (MIRA 17:7)

1. Tomskiy nauchno-issledovatel'skiy institut vaktsin i
syvorotok.

MURZINA, G.A.,referent; TSAURA, T.G.,referent.

Mechanized lowering of timber into the mine (from "Zeitschrift fur
Erzbergbau und Metallhuttenwesen," no.1, 1956). Biul.TSIIN tsvet
met. no.18:35-36 '57.   (MIRA 11:5)
          (Germany, West--Material handling) (Mine timbering)

MURZINA, N. A.

Boyev, S. N. and Murzina, N. A. "On the forms of causative agents of lung helminthosis in the sheep and goats of Kazakhstan", Sbornik rabot po gel'mintologii (Vsesoyuz. in-t gel'mintologii im. akad. Skryabina), Moscow, 1948, p. 59-64.

SO: U-3042, 11 March 53, (Letopis'nykh Statey, No. 10, 1949).

MURZINA, N.S.

4495.   CHOICE OF SELECTIVE SOLVENTS FOR REFINING BAKU NON-PARAFFINIC
DISTILLATES, Kuliev, A.H., Kuliev, R.Sh., Antonova, K.I., Kilyashina, S.N. and
Murzina, N.S. (Azerbaidzh. Neft. Khoz. (Azerbaij Oil Ind.), 1956, (2), 25-26;
abstr. in Chem. Abstr., 1957, vol. 51, 9137). Phenol and furfural were tested
for the refining of various lubricating oil stocks made from Baku crude oils.
Phenol proved in most cases to be more effective in raising the viscosity
index and lowering the acidity, but the oil yield was smaller, and the solvent
consumption higher than when furfural was used.

SOV/28-58-6-15/34

AUTHORS: Yasnopol'skiy, V.D., Murzina, N.S., Konysheva, A.S.,
             Engineers

TITLE: The Determination of Iodine Numbers of Liquid Fuel
             (Opredeleniye yodnykh chisel zhidkogo topliva)

PERIODICAL: Standartizatsiya, 1958, Nr 6, pp 55-57 (USSR)

ABSTRACT: The content of unsaturated hydrocarbons in liquid
             fuel is determined by iodine number, which expres-
             ses the number of grams of iodine bound by 100
             grams of the tested product. The iodine is hydro-
             lyzed, and then the hypoidous acid unites with
             the hydrocarbon. The iodine added must exceed
             the quantity, chemically necessary, by 93-95%.
             Experiments have shown that the quantity of the
             sample tested, influences the iodine number. In
             a sample of 0.4 g, the iodine number was 50-60,
             in samples of 0.2 g 70-80. The quantity of the
             iodine solution determines also the iodine number
Card 1/2   (Table 1), which increases quickly and then more

YASNOPOL'SKIY, V.D.; MURZINA, N.S.; NIKITINA, L.S.; SULEYMANOVA, U.N.

Determining the ash content and admixtures in petroleum products.
Sbor.trud.Az NII NP no.4:300-313 '59.   (MIRA 15:5)
            (Petroleum products--Analysis)

KRICHEVSKIY, A. M.; MIKHAYLOVA, P. V.; MURZINA, V. I.; RATINA, S. M.;
        POKHIL, A. I.; NALBAT, A. S.

Certain data on viral etiology of psoriasis. Vest. vener.,
Moskva no.4:11-15 July-Aug 1951.   (CLML 21:1)

1. Of the Ukrainian Scientific-Research Skin-Venereological
Institute (Director -- Prof. A. M. Krichevskiy).

MURZINA V. I.
KRICHEVSKIY, A.M.: MIKHAYLOVA, P.V.: MURZINA, V.I.: RATINA, S.M.: POKHIL, A.I.:
NALBAT, A.S.

Psoriasis

On the article "Some data on the virus etiology of psoriasis" by A.M. Krichevskiy,
P.V. Mikhaylova, V.I.Murzina, S.M. Ratina, A.I. Pokhil, A.S. Nalbat. Reviewed by
Prof. B.S. Yablenik. Vest. ven. i derm. no. 4, 1952.

Monthly List of Russian Accessions. Library of Congress, November 1952. UNCLASSIFIED

Murzina Ye H.

AUTHORS: Zatsepin, G. T., Krugovykh, V. V.   56-2-4/51
             Murzina, Ye. A., Nikol'skiy, S. I.

TITLE: The Study of High-Energy Nuclear-Active Particles by Means
             of an Ionization Chamber (Nablyudeniye yaderno-aktivnykh
             chastits vysokoy energii pri pomoshchi ionizatsionnykh kamer)

ABSTRACT: In autumn 1955 the authors investigated at an altitude of
             3860 m above sea level nuclear-active particles of high
             energy ($E > 10^{11}$ eV). The apparatus used for these me-
             asurements consisted of 6 impulse-ionization chambers which
             were mounted below a lead layer of variable thickness. The
             ionization chambers consisted of brass cylinders. An
             electronic device made possible the registration of the
             intensity of the ionization impulse in each of the 6 chambers.
             Beside the ionization chambers there was a system of 972
             hodoscopic counters with a total surface of ~ 10 m^2.
             The distribution of frequencies of the ionization bursts as

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The Study of High-Energy Nuclear-Active Particles by Means   56-2-4/51
of an Ionization Chamber

a function of their intensity (below different filters) it
shown in a diagram. The integral spectra of the bursts with
N > 2000 relativistic particles can be expressed by an
exponential law:

$$V \ (> N) = A/N^{\gamma}$$

Here the exponent γ is the same with all three spectra
(20, 50 and 80 cm thick lead layers); it is on the average
$\bar{\gamma} = 1,5 \pm 0,16$. The absolute frequencies of the ionization
bursts belon 20 cm and 50 cm of lead coincide within the
range of error, limits. The range for the absorption of the
nuclear active component in air is ~ 120 g.cm^{-2}. This value
is obtained in different ways. In the analysis of the
correlation of ionization bursts with atmospheric showers
the cases observed were divided into two groups:
1.- Ionization bursts which are accompanied by an atmospheric
shower of small density. 2.- Ionization bursts which are
accompanied by a broad atmospheric shower of more than 10^{3}
Card 2/4   particles. The result of this analysis is shown in a

The Study of High-Energy Nuclear-Active Particles by Means   56-2-4/51
of an Ionization Chamber

diagram as follows: With increasing intensity of the
ionization burst also the probability of air escort
increases (vozduzhnoye soprozhdeniye). In 25 % of the
cases the authors observed bursts which can be explained by
a simultaneous entrance into the detector of at least
two nuclear active particles of high energy. The authors
investigated the showers with a number of particles from
7.10^4 to 7.10^5. The distribution of the frequency of the
ionization bursts produced by the nuclear-active particles
of the wide atmospheric shower with respect to their density
is shown in a diagram. The frequency of bursts decreases
with increasing thickness of the lead layer. The
distribution with respect to the density of the showers
accompanying wide atmospheric showers can be represented
by the exponential function with the exponent $\gamma = 0,9 \pm 0,2$.
The spectrum of the nuclear active component in a wide
atmospheric shower of $\sim 10^5$ particles can be represented
in the interval of energies of from 5.10^{11} to 10^{13} eV in the
form $E^{-0,9 \pm 0,2}$. But the real spectrum can be different from
the one given here because of the simultaneous entrance of

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The Study of High-Energy Nuclear-Active Particles by Means of an   56-2-4/51
Ionization Chamber

        several nuclear-active particles on the surface of the
        detector.
        There are 3 figures, 1 table, and 1 reference, 1 of which are
        Slavic.

ASSOCIATION: **Institute of Physics** imeni P. N. Lebedev AS USSR

        (Fizicheskiy institut im P. N. Lebedeva Akademii nauk
        SSR)

SUBMITTED: July 20, 1957

AVAILABLE: Library of Congress

        1. Ionization chambers-Performance   2. Ionization chambers-
           Characteristics   3. Particles-Study and teaching

Card 4/4

21(7)

SOV/56-35-5-44/56

AUTHORS: Murzina, Ye. A., Nikol'skiy, S. I.; Yakovlev, V. I.

TITLE: The Observation of Nuclear-Active Particles of Cosmic Radiation with an Energy of $\geq 10^{13}$ eV (Nablyudeniye yaderno-aktivnykh chastits kosmicheskogo izlucheniya s energiyey $\geq 10^{13}$ eV)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 35, Nr 5, pp 1298-1300 (USSR)

ABSTRACT: In the Fall of 1957 the current intensity of nuclear-active high-energy cosmic radiation particles was measured in an altitude of 3860 m above sea level. The detector of nuclear-active particles consisted of 7 ionization chambers which were surrounded by lead. The arrangement of the ionization chambers is shown by a schematical drawing. An analysis of measuring results shows the following: Nuclear-active particles having an energy of more than $2 \cdot 10^{12}$ eV are accompanied in 81 ± 3 cases by extensive atmospheric showers of more than $3 \cdot 10^{3}$ particles. In the case of $\geq 1.5 \cdot 10^{13}$ eV nuclear-active particles this percentage is $83 \pm 4\%$. Thus, the percentage of high-energy particles accompanied by showers depends only to a small extent on the energy of nuclear-active particles.

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SOV/56-35-5-44/56

The Observation of Nuclear-Active Particles of Cosmic Radiation With an Energy of $\geqslant 10^{13}$ eV

A diagram shows the integral energy spectrum of nuclear-active particles observed in an altitude of 3860 m above sea level. The energy spectrum may be represented in the form

$F(> E) \sim 1/E^{1.53 \pm 0.07}$ in the energy interval of between

10^{12} and 10^{13} eV, which is in agreement with the energy spectrum of the primary cosmic radiation of corresponding energy. Much fewer particles with $\geqslant 3.10^{13}$ eV were, by the way, found than might have been expected. The authors thank Professor N. A. Dobrotin and G. T. Zatsepin for useful discussions of the results obtained. There are 2 figures and 3 references, 2 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev of the Academy of Sciences USSR)

SUBMITTED: July 10, 1958

Card 2/2

20-11.-5-1/./59

AUTHORS: Dovzhenko, O. , Zatsepin, V. , Murzina, Ye.A, :::::::::, J.,
Rakobol'skaya, I. , Tukish, Ye.

TITLE: Investigation of Extensive Atmospheric Showers of Cosmic
Radiation (Issledovaniye shirokikh atmosfernykh livney kos-
micheskogo izlucheniya)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 5, pp.899-902
(USSR)

ABSTRACT: In autumn 1955 the energetic characteristics of extensive at-
mospheric showers were investigated at an altitude of 3860 m
above the sea level. The lay-out of the experimental
equipment is illustrated in a diagram. Extensive atmospheric
showers caused by primary particles with an energy of from
$2.10^{13}-10^{16}$ eV were separated by fourfold discharges in two
groups of counters (with a mutual distance of two meters).
A number of about 4.10^{4} extensive atmospheric showers were
recorded. A great number of counters was employed in these
measurements. The energy spectrum of the myons at a distance

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20-118-5-14/ 59

Investigation of Extensive Atmospheric   Showers of Cosmic Radiation

from the shower axis not exceeding 10 m can be expressed in the form $\sim 1/E^m$ in the energy interval of the myons of from $E = 1,5 - 3,5$ BeV. Here holds m = $0,27 \pm 0,06$. The authors report on the observations of the passage of shower cores through a detector for penetrating particles which was mounted at a depth of a water equivalent of 800 g/cm^2. The computed shower rate caused by primary particles with an energy of $E_0 < 6.10^{14}$ eV completely agrees with the observed rate, whereas the observed shower rate caused by primary particles with $E > 6.10^{14}$ eV is several times as high as the expected rate. The spectrum of the electron-photon component in the core parts of the here observed atmospheric showers was investigated by means of a great cloud chamber, that is to say for energies of from $2.10^8 - 10^{10}$ eV at a varying distance from the shower axis. The experimentally determined spectra of the electron-photon component at distances up to 4 m from the shower axis showed a decrease of electrons and photons with high energies , contratry to predictions of cascade theory. This only holds, if the energy of the neutral pions responsible for the generation of the electron-photon component is set equal to 10^{12} eV. This contradiction between experiment and theory can be removed, if an essential in-

Card 2/4

20-118-5-14/59

Investigation of Extensive Atmospheric Showers of Cosmic Radiation

fluence of the neutral pions with energies above 10^{10} eV on
the electron-photon component of the shower is assumed.
Filters of various thickness of different materials were
mounted above the ionization chambers. This permitted to
measure the energy flow, which is carried by the electron-pho-
ton component of the shower at various distances from the
shower axis and also the determination of the energy of the
nuclear-active shower particles. The energy of the particle
with the highest energy in the core of the extensive atmos-
pheric showers with less than 10^5 particles amounts to 10 %
in the mean of the energy of the electron-photon component
of the shower at the observation altitude. The remaining
nuclear-active particles in the shower are distributed accord-
ing to the law $\sim 1/E^n$, E denoting the energy of the nuclear
active particles and n = $0,9 \pm 0,2$ holding. The cores of the
extensive atmospheric showers with a number of particles
exceeding 10^{15} are very complicated. There are 3 figures,
and 6 references, 6 of which are Soviet.

Card 3/4

MURZINA, YE. A.

THE ENERGY SPECTRUM OF NUCLEAR-ACTIVE PARTICLES OF COSMIC RAYS AT 3860
METERS ALTITUDE, AND ASSOCIATED EXTENSIVE AIR SHOWERS
S.I. Dovzhenko, G.T. Zatsepin, YE. A. Murzina, S.I. Nikolsky, V.I. Yakovlev

1. The energy spectrum of nuclear-active particles has been investigated by
means of cylindrical ionization chambers of total area I m^2 placed under lead
layers of 20, 50, and 80 cm, and also by means of flat ionization chambers of
area 2 m^2 placed in a lead block with an 8 cm thick top cover surmounted by
a layer of graphite of varying thickness (25 - 65 cm.) To register the
extensive air showers the firstseries of measurements was made by hodoscope
counters, and the second, by ionization chambers.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11
July 1959

31530
S/627/60/002/000/012/027
D299/D305

3. 2410 (1559, 2205, 2705)

AUTHORS: Dovzhenko, O. I., Zatsepin, G. T., Murzina, Ye. A., Ni-
kol'skiy, S. I., and Yakovlev, V. I.

TITLE: Energy spectrum of nuclearactive component of cosmic ra-
diation at 3860 m, and related extensive air showers

SOURCE: International Conference on Cosmic Radiation. Moscow,
1959. Trudy. v. 2. Shirokiye Atmosfernyye livni i kas-
kadnyye protsessy, 144-151

TEXT: Two series of experiments are described, of 1955 and of
1957. The apparatus used in 1957 permitted detecting extensive air
showers exceeding 1000 particles only. The relation is established
between the nuclearactive particles and the ionization bursts in
the chambers. Computations showed that if the integral energy-spec-
trum of the incident nuclearactive particles is expressed by the
power law $f(>E) = AE^{-\gamma}$, then the ionization spectrum is also de-
scribed by a power law with the same γ. The experimentally obtained

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Energy spectrum of ...

energy spectrum of the nuclearactive component is plotted in a fi-
gure. From the figure it is clear that the integral energy spectrum
of nuclearactive particles in the range of 10^{12} to $5 \cdot 10^{13}$ ev., can
be expressed in the form $f(>E) = AE^{-\gamma}$, where $\gamma = 1.5 \pm 0.1$. The ab-
solute intensity of the nuclearactive particles with energy $>10^{12}$
ev. is 5.5 ± 0.6 hour^{-1}sterad^{-1}. By comparing the obtained intensi-
ty with the spectrum of the primary radiation and the number of
low-energy nuclearactive particles at sea level, one obtains the
absorption length for nuclearactive particles. In order to detect
the air showers accompanying the nuclearactive particles, 15 cylin-
drical ionization chambers were used. The obtained integral number-
spectrum is shown in a figure. It was found that the percentage of
nuclearactive particles, accompanied by air showers, increases mono-
tonically with the energy of the nuclearactive particles, varying
between 76 and 88% for energies of $2 \cdot 10^{12}$ to $2.5 \cdot 10^{13}$ ev. The inter-

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Energy spectrum of ...

action free-path was calculated by the change in the number of the recorded nuclearactive particles as a function of increasing thickness of the graphite layer above the ionization chamber. It was also found that the integral energy spectrum of nuclearactive particles can be expressed in the form $F(>E) \sim E^{-m}$, where $m = 0.9 \pm 0.2$. This formula apparently characterizes the spectrum of the nuclearactive component as a whole. Further, the energy spectra of nuclearactive components for showers of different total number of particles is determined, as well as for various distances from the shower axis. The procedure used for this purpose is described. The air showers under investigation were divided into 3 groups (according to total number of particles). A peculiar feature of the spectrum at distances of 0 to 1 m was the absence of nuclearactive particles with energies below 10^{11} ev. The integral spectra of nuclearactive particles for the 3 groups of showers are shown in a figure. The spectra are characterized by smooth shape even in the region where a shower contains 1 to 2 particles. By averaging, one obtains the

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Energy spectrum of ...

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energy spectrum $F(>E) \sim E^{-0.9 \pm 0.1}$ for $2.5 \cdot 10^{10} < E < 10^{12}$ ev. The dependence of the number of nuclearactive particles on the total number of particles can be expressed as $N^{1.5}$ for the range $N < 10^5$. With $N < 10^5$, the dependence of the number of nuclearactive particles on N changes its character. The comparatively softer character of the energy spectrum of nuclearactive particles with $N > 10^5$ is in qualitative agreement with the results obtained from another series of experiments; it is also one more proof of the possible change in the character of elementary nuclear interaction with primary-particle energies $\geq 3 \cdot 10^{14}$ ev. There are 6 figures, 2 tables and 14 references: 12 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: M Kaplon, J. Klose, D. Ritson, W. Walker. Phys. Rev., 91, 1573, 1953.

Card 4/4

MURZINA,Ye. A., NIKOLSKIY, S. I. and YAKOVLEV, V. I.

"High Energy Nuclear-Active Particles and the Extensive Air
Showers Which Accompany Them"

Report presented at the International Conference on Cosmic Rays
and Earth Storm, 4-15 September 1961, Kyoto, Japan.

P. N. Lebdev Institute of Physics, Moscow, U.S.S.R.

S/048/62/026/005/017/022
B108/B102

3,2410

AUTHORS: Nikol'skiy, S. I., Kurzina, Ye. A., Tukish, Ye. I., and
Yakovlev, V. I.

TITLE: Nuclear-active particles and high-energy electron-photon
avalanches in extensive atmospheric showers of cosmic-ray
particles

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26,
no. 5, 1962, 668-673

TEXT: An ionization chamber and a counter device with a surface area of
25 m^2 were used to measure the total number and energy of shower particles.
The errors in measurement varied from 20 to 40%. The energy of electron-
photon showers induced by photons of $10^{10} - 10^{12}$ ev is proportional to the
number N of particles. In the present case, it was determined from the
ionization under 10 radiation units of lead: $E = 1.2 \cdot 10^8$ N ev. The nuclear-
active component was recorded by ionization chambers under a graphite
layer (210 g/cm^2) which caused the nuclear-active particles to impart most

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Nuclear-active particles and...

S/048/62/026/005/017/022
B108/B102

of their energy to the electron-photon component. It is established that the total number of shower particles cannot be determined unambiguously from energy measurements of the electron-photon component in an extensive atmospheric shower of high-energy particles. Discrepancies between experimental and calculated shower spectra are due to nuclear-active particles falling upon the detector. There are 7 figures.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Institute of Physics imeni P. N. Lebedev of the Academy of Sciences USSR)

Card 2/3

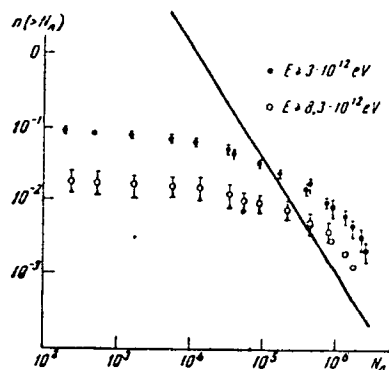Nuclear-active particles and...

Fig. 4.

Fig. 4. Integral spectrum of extensive showers induced by nuclear-active particles. Straight line: shower spectrum without registration of high-energy nuclear-active particles

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L 00542-66   EWT(m)/FCC/T   LJP(e)   UR/0567/65/001/006/1079/1092
ACCESSION NR: AP5017950

AUTHOR: Murzina, Ye. A.; Nikol'skiy, S. I.; Tukish, Ye. I.; Yakovlev, V. I.

TITLE: Nuclear-active high-energy particles and the accompanying cosmic ray ex-
tensive air showers. 19

SOURCE: Yadernaya fizika, v. 1, no. 6, 1965, 1079-1092

TOPIC TAGS: cosmic ray measurement, cosmic radiation composition, cosmic ray
shower, cosmic ray telescope, ionization hodoscope, spectrum analysis

ABSTRACT: The authors report the experimental results on the energy spectrum of
nuclear-active particles in the region 3×10^{12} to 10^{14} eV at an elevation of 3860 m
above sea level, and on the extensive air showers accompanying these particles. The
apparatus is shown schematically in Fig. 1 of the Enclosure and consists of two
trays of ionization chambers placed under a thick layer of carbon in a cavity sur-
rounded by lead shielding. These chambers were used to detect the high-energy
nuclear-active particles. Two additional trays of ionization chambers, under a re-
latively thin layer of lead, were placed above the carbon to measure the energy of
the electron-photon component of the shower core. The number of particles in the
extensive showers was determined with hodoscopic counters placed both immediately
above the block of ionization chambers and at a distance of about 30 meters from the

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L 00542-66

ACCESSION NR: AP5017950

center of the apparatus. The measured energy spectrum cannot be described by a power law with a single exponent over the entire energy range. The mean free paths were determined for absorption and for nucleon interaction in the atmosphere, and found to be 120 and 83 g/cm^2 respectively, for particle energies above 10^{13} eV. An analysis of the distribution of the total number of particles of extensive air showers accompanying nuclear-active particles of a given energy in the region $\geq 3 \times$ $x\ 10^{12}$ eV leads to the assumption that a change in the picture of the collision of a nucleon and the air nuclei takes place at an incident-nucleon energy above 10^{13} eV. This change explains the features of the photon energy spectrum in the upper atmosphere and the published data on extensive air showers with 10^4--10^6 particles. Although the spectra of the air showers could also be attributed to a sharp change in the composition of the primary cosmic radiation near 10^{13} eV, the latter assumption is not borne out by direct balloon and rocket data on the composition of the primary radiation. Orig. art. has: 9 figures, 31 formulas, and 3 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences, SSSR)

SUBMITTED: 02Sep64   ENCL: 01   SUB CODE: NP, GP

NR REF SOV: 010   OTHER: 006

Card 2/3

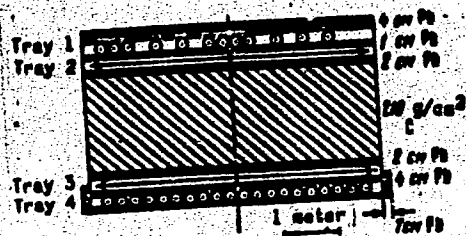L 00542-66
ACCESSION NR: AP5017950

ENCLOSURE: 01

Tray 1
Tray 2

Tray 3
Tray 4

Fig. 1. Detector of nuclear-active particles and of electron-photon showers of high energy.

Card 3/3

FLORINSKIY, F.V., prof.; VOLOSHINA, L.P., dots.; LYAKHOVITSKIY, S.I., kand.
        tekhn.nauk; SHIROCHENKO, Ye.V., dots. [deceased]; ARCHAKOVA, L.A.,
        inzh.; GVAY, T.B., inzh.; MURZINA, Z.I., inzh.

Results of research on screen vibrating in the horizontal horizontal
plane. Izv.vys.ucheb.zav.; gor.zhur. no.2:167-170 '60.
                                                (MIRA 14:5)

1. Dnepropetrovskiy gornyy institut.
                        (Screens (Mining))

SHIROCHENKO, Ye.V., kand.tekhn.nauk [deceased]; CHUDNOVSKIY, V.Yu., inzh.;
    TRUDOV, V.N., inzh.; KUDLOV, L.V., inzh.; MURZINA, Z.I., inzh.

    Experimental checking of the design calculations of the metal
    structures of mobile transport bridges. Ugol' Ukr. 6 no.5:
    13-16 My '62.   (MIRA 15:11)

    1. Dnepropetrovskiy gornyy institut.
                (Transport bridges--Design and construction)
                        (Ukraine--Strip mining)

POPUTNIKOV, F.A., inzh.; ZHURAVEL', R.D., inzh.; MURZINA, Z.A., inzh.;
     NUZHDIN, A.I., inzh.

     Ways to make use of Kuznetsk Basin low coking and noncoking coals
     in the charge for coking. Obo;.i brik.ugl. no.30:82-89 '63.
                                                    (MIRA 17:4)

KURETNIN, J. I.

32550. KURETNIN, I. I. : SIRENKO, A. L. S'yennaya sosnu chna: perela na trutk e
K'-1. Les. Pes. Brox-rs', 1949, Vol. , p. 15-2

SC: Letepis' Zhurnal' n, ..J utey, Vol. -, Moskva, 1949

10.2000

AUTHORS: Lunev, V.V., Murzinov, I.N. and Ostapovich, O.I.
              (Moscow)

TITLE: The Motion of a Thin Blunt Cone at a Small Angle of
              Incidence at Large Supersonic Velocity

ABSTRACT: The effect of bluntness on the pressure distribution
              along the generators is considered. A qualitative
              picture of the flow is constructed. The results of
              experimental investigations are given and an approximate
              law of similarity is constructed. A cylindrical
              coordinate system is introduced, the x-axis lying along
              the axis of the cone. The equations expressing the
              conservation of mass, impulse and energy in a volume
              bounded by the surfaces of the shock wave, the body and
              two neighbouring meridional planes are written in
              integral form. Two types of bluntness are considered,
              one being in the form of part of a sphere and the other
              being in the form of a plane face. In the first case

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S/179/60/000/03/018/039
E031/E413

The Motion of a Thin Blunt Cone at a Small Angle of Incidence at Large Supersonic Velocity

it is assumed that the pressure is distributed over the sphere according to Newtonian theory. Neglecting terms of the order of the square of the angle of incidence, suitable forms for the unknown quantities are substituted in the equations. The sum of terms of the order of the angle of incidence are equated to zero and integrals involving a term in the density are excluded. Then two equations are obtained for the pressure $p_1(x)$ and $R_1(x)$ (the pressure is sought in the form $p_0(x) + \alpha \cos \varphi p_1(x)$, α being the angle of incidence and φ the azimuthal angle), R the distance from the axis of the body to the shock wave is sought in the same form. In order to solve the equations, it is necessary to know the values of $p_0(0)$ and $R_1(0)$, which requires an additional condition for x approximately zero. On the other hand, for x greater than or equal to approximately 2, the solution virtually does not depend on $p_1(0)$ or $R_1(0)$. The pressure distributions are

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S/179/60/000/03/016/039
E031/E413

The Motion of a Thin Blunt Cone at a Small Angle of Incidence at
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given in the form of graphs. New coordinates $Y = p/\beta^2$,
$\zeta = (2/C_x)^{1/2} x\beta^2$ ($\beta = \theta_0 + \alpha \cos\varphi$, θ_0 being the
semi-apex angle of the cone), used in these graphs are
generalized for $M\theta_0$ very much greater than unity.
The following approximate similarity law is formulated:
for flow at hypersonic velocities round thin blunt
cones at small angles of incidence the pressure
distribution along the generators is determined from the
local angle of attack and is subject to a similarity law
of the form $Y = f(\zeta)$. This generalizes Cherniy's law
for cones at zero angle of incidence. There are
3 figures and 6 references, 3 of which are Soviet and
3 English.

$\times$

SUBMITTED: February 4, 1960

Card 3/3

MURZINOV, I.N. (Moskva)

Effect of a laminar boundary layer on the flow about a slender
blunt cone at high supersonic speeds. Izv. AN SSSR. Otd. tekh.
nauk.Mekh. i mashinostr. no. 1:152-153 Ja-F '61. (MIRA 14:2)
                    (Aerodynamics, Supersonic)

33555

S/179/61/000/006/004/011
E032/E514

.0.1410 '327

26.2160

AUTHOR: Murzinov, I.N. (Moscow)

TITLE: The flow of a gas in the neighbourhood of the
            stagnation point of a blunt-body in the case of a
            finite rate of excitation of oscillatory degrees of
            freedom

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye
             tekhnicheskikh nauk. Mekhanika i mashinostroyeniye,
             no.6, 1961, 33-36

TEXT: It is pointed out that under normal atmospheric
conditions only rotational and translational degrees of freedom
are excited during the motion of blunt bodies. At supersonic
velocities the temperature rises to 2000-2500°K and the oscilla-
tory degrees of freedom become excited owing to molecular
collisions.   Since this requires a large number of collisions it
follows that there is a gradual excitation of the oscillatory
degrees of freedom behind the shock-wave and a zone of non-
equilibrium flow appears as a result. In the present paper it is
assumed that non-equilibrium exists between two classes of degrees
of freedom and that within each class all the quantities are in
Card 1/3

The flow of a gas ...

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S/179/61/000/006/004/011
E032/E514

thermodynamic equilibrium. The first class includes translational and rotational degrees of freedom and the second class,oscillatory degrees of freedom. The gas is assume. to be diatomic and the blunt body axially symmetric. Moreover, the temperature and pressure range is selected so that dissociation may be neglected and departures from thermodynamic equilibrium are small. In oraer to obtain numerical estimates, the calculations are specialised to the case of a sphere moving through air with a velocity $V_\infty \approx 2500$ m/sec. The axial density distribution between the shock-wave and the body is obtained and it is shown that different density profiles correspond to different relaxation times. For small values of the relaxation time,equilibrium is reached in the neighbourhood of the shock-wave, while for large values of the relaxation time, equilibrium is reached only in the immediate neighbourhood of the body. The relaxation time is inversely proportional to the gas density and as the velocity of the body increases the relaxation time is found to increase also, i.e. beginning with a certain altitude the flow will in practice be a non-equilibrium flow. The retreat of the shock-wave from the

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The flow of a gas ...

33555
S/179/61/000/006/004/011
E032/E514

sphere is found to increase with increasing relaxation time
There are 2 figures and 7 references 4 Soviet-bloc and 3 non-
Soviet-bloc.   The English-language references read as follows:
Ref 1 Hayes W.D., Probstein R F Hypersonic flow theory,
Academic Press N.Y. and London 1959, pp.158-162. Ref.3:
Liepmann H.W Roshko A. Elements of gasdynamics N.Y. 1956
pp 306-309. Ref.7 Van Dyke M. Supersonic flow past a family of
blunt axisymmetric bodies, NASA Technical Report R-1, 1959.

SUBMITTED: May 15, 1961

Card 3/3

S/2$\theta$$\acute{1}$/6$\ell$/0C0/001/006/C1.
B104/B108

10.1220

AUTHOR: Murzinov, I. N. (Moscow)

TITLE: Effect of variable Prandtl number on a flow with small
              Reynolds numbers near the critical point for a blunt-nosed
              body

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 1,
              1962, 39 - 43

TEXT: The steady-state flow of a viscous gas near the frontal point of a
blunt-nosed body with axial symmetry is investigated. The body be traveling
with hypersonic speed. The gas is assumed to be sufficiently rarefied, and
viscous forces between body and shockwave have to be taken into account.
The system of equations

$$\frac{\partial (\rho u x)}{\partial x} + \frac{\partial (\rho v x)}{\partial y} = 0$$

$$\rho u \frac{\partial u}{\partial x} + \rho v \frac{\partial u}{\partial y} = -\frac{\partial p}{\partial x} + \frac{1}{R_\infty} \frac{\partial}{\partial y}\left(\mu \frac{\partial u}{\partial y}\right)$$

$$\rho u \frac{\partial i}{\partial x} + \rho v \frac{\partial i}{\partial y} = \frac{1}{R_\infty} \frac{\partial}{\partial y}\left(\frac{\mu}{\sigma} \frac{\partial i}{\partial y}\right)$$

(2.1)

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Effect of variable Prandtl ...

is solved assuming that the transfer properties of air are functions of pressure and enthalpy. σ denotes the Prandtl number. ρ, μ, and σ near the critical point are considered to be functions of enthalpy only. The expressions

$$V = \rho k v, \qquad \eta = \sqrt{R_\infty} \int_0^y \rho \, dy \qquad (2.2)$$

(η denotes the Dorodnitsin variable) are introduced into the above system of equations, yielding solutions of the form

$$u = x f'(\eta), \quad V = -\frac{2k}{\sqrt{R_\infty}} f(\eta), \quad i = i(\eta), \quad \frac{\partial p}{\partial x} = -2b(y)x \qquad (2.3)$$

The functions $\rho\mu(i)$, $\frac{1}{\rho}(i)$ and $\frac{\rho\mu}{\sigma}(i)$

$$\rho\mu\left[\frac{\kappa\delta^3 \, cek^3}{\mu^6}\right], \quad \frac{1}{\rho}\left[\frac{\mu^6}{\kappa\delta \, cek^3}\right], \quad \frac{\rho\mu}{\sigma}\left[\frac{\kappa\delta^3 \, cek^3}{\mu^6}\right]$$

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Effect of variable Prandtl...   S/207/62/000/001/006/018
                                                 B104/B108

follows: Adams M. S., Probstein, R. F. On the Validity of Continuum Theory
for satellite and Hypersonic Flight Problems at High Altitudes. Jet
Propulsion, 1958, no. 2,; Hayes, W. D., Probstein, R. F., Hypersonic Flow
Theory. Academic Press, New York - London, 1959; Herring T. K. The
Boundary Layer Near the Stagnation Point in Hypersonic Flow Past a Sphere.
Journal Fluid Mechanics, 1960, no. 3; C. Frederick Hansen. Approximations
for thermodynamics and transport properties of high-temperature air. NASA
Technical Report R-50, 1959.

    ITTED: October 23, 1961

i.. 1: $\rho\mu$, $1/\rho$ and $\rho\mu/\sigma$ as functions of enthalpy (according to C.
Frederick Hansen).

Fig. 3: Flow of heat to the body as function of wall temperature.

Table: Flow of heat to the body wall calculated by various methods.

Card 4/0 y

ACCESSION NR: AP3014929   S/0207/63/000/005/0139/0141

AUTHOR: Murzinov, I. N. (Moscow)

TITLE: Heat transfer at the stagnation point of a blunt body at low
Reynolds numbers

SOURCE: Zhurnal prikl. mekhaniki i tekhn. fiziki, no. 5, 1963,
139-141

TOPIC TAGS: heat transfer, stagnation point heat transfer, stagna-
tion point, Reynolds number, blunt body hypersonic flow, normal shock
wave, Runge Kutta method, shock wave curvature, blunt body stagnation
point, blunt body heat transfer, blunt body stagnation point heat
transfer

ABSTRACT: On the basis of an analysis of hypersonic flow around a
sphere, a parameter $N = R_0 k^2$ is defined which determines the stagna-
tion-point heat transfer at low Reynolds numbers, where R_0 is the
Reynolds number related to stagnation conditions and k is the ratio
of densities at the shock. A system of equations of motion and energy
in the stagnation-point region is solved numerically by the

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ACCESSION NR: AP3014929

Range-Kutta method, and the results show that the heat flow depends almost exclusively on the parameter N. The results, which can be approximated by the relation

$$Q_1 = 1 + \frac{2.14}{(\lg N + 0.95)^{3.1}}.$$

are presented in Fig. 1 of the Enclosure. They agree satisfactorily with the available experimental data. An approximate method is outlined to account for the effect of low R_d numbers on the flow in the stagnation-point region about blunt bodies of arbitrary shape. "The author thanks V. V. Lunev for discussion and comments." Orig. art. has: 2 figures and 8 formulas.

ASSOCIATION: none

SUBMITTED: 07Mar63   DATE ACQ: 27Nov63   ENCL: 01

SUB CODE: AI   NO. REF SOV: 004   OTHER: 007

Card 2/3

ACCESSION NR: AP4018431   S/0179/64/000/001/0115/0120

AUTHOR: Murzinov, I. N. (Moscow)

TITLE: Similarity of the temperature profiles in bodies during free movement in the
atmosphere at ultrasonic velocities and high elevations

SOURCE: AN SSSR. Izv. Otd. tekh. nauk. Mekhanika i mashinostroyeniye,
no. 1, 1964, 115-120

TOPIC TAGS: jet propulsion, space exploration, satellite, satellite tracking,
satellite design, satellite temperature, satellite material, satellite reentry,
earth satellite

ABSTRACT: The similarity of the temperature profiles in bodies during their reentry
at high velocities is considered. It is shown that the temperature profiles for
most of the orbit, provided the velocity is practically constant, is determined by
only one parameter. Similitude parameters are given for the temperature profile,
with the physical and chemical transformations in the materials taken into account.
The temperatures of bodies during free motion depend on the heat exchange between
the body and the external radiation (from the Sun, Earth, etc.). "The author
thanks G. I. Petrov, V. V. Lunev and M. V. Savelov for their remarks." Orig. art.
has: 25 equations.
Card   1/2

ACCESSION NR: AP4018431

thanks G. I. Petrov, V. V. Lunev and M. V. Savelov for their remarks." Orig. art. has: 25 equations.

ASSOCIATION: none

SUBMITTED: 16Mar63   DATE ACQ: 23Mar64   ENCL: 00

SUB CODE: AS   NO REF SOV: 000   OTHER: 003

Card 2/2

MURZINOV, I.N.   (Moskva)

Temperature profiles in bodies moving at high altitudes with
hypersonic speeds. Izv. AN SSSR. Mekh. i mashinostr. no.4:
148-150 Jl-Ag '64   (MIRA 17:8)

L 46169-65   EWT(1)/EPF(c)/EPF(n)-2/EWG(m)/EPR   Pr-4/Ps-4/Pu-4   WW
ACCESSION NR: AP5009553   S/0207/65/000/001/0109/0110

AUTHOR: Murzinov, I. N. (Moscow)

TITLE: Concerning heat exchange in the vicinity of the critical point for dis-
continuous Prandtl numbers

SOURCE: Prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 1, 1965, 109-110

TOPIC TAGS: heat exchange, heat conduction, boundary layer, critical point,
Prandtl number

ABSTRACT: It is pointed out that to determine the influence of variability of
transport properties of a gas on heat exchange it is useful to employ a model in
which some of the transport properties are discontinuous. The present note con-
siders the effect of discontinuous Prandtl numbers on heat exchange. Two specific
cases are discussed: 1. The Prandtl number is equal to unity everywhere except
in a narrow region with nearly-infinite thermal conductivity. It is shown that a
thin layer of gas with large thermal conductivity does not influence the heat flux
to a strongly cooled wall. In the presence of a layer of gas with small thermal
conductivity, this gas can act under certain conditions as a filter, which permits

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transport of heat with the mass flow and prevents transport of heat by conduction.
2. The question of the defined enthalpy (or temperature) from which the character-
istics of the gas (including the Prandtl number) are calculated is discussed, and
it is shown by means of an example that when the Prandtl number has a sharp maximum
as a function of the enthalpy, the heat flux to a cooled wall can be some 30%
larger than if the enthalpy is constant over the entire thickness of the boundary
layer. Orig. art. has: 2 figures and 7 formulas.

ASSOCIATION: None

SUBMITTED: 16Mar64   ENCL: 00   SUB CODE: TD, ME

NR REF SOV: 000   OTHER: 002

Card 2/2

L 65047-65   ARG/EWA(k)/EWT(d)/FBD/FSS-2/EWT(l)/FBO/FA/EWP(m)/EWG(v)/EWP(c)/
EWA(d)/ECS(k)/EWA(l)/EEC-4   TT/WW/GW

ACCESSION NR: AP5021710   UR/0373/65/000/004/0036/0040

AUTHOR: Murzinov, I. N., (Moscow)

TITLE: The shape of a body decomposing under intensive heating during motion in the atmosphere

SOURCE: AN SSSR. Izvestiya. Mekhanika, no. 4, 1965, 36-40

TOPIC TAGS: aerodynamic heat transfer, hypervelocity aerodynamics, reentry aerodynamics, meteorite, reentry heat transfer

ABSTRACT: An approximate scheme is proposed for the problem of the high-speed motion of a body in the atmosphere under intensive unsteady heat-transfer conditions leading to a significant change in the body's shape, and an analytical solution is obtained. The solution is valid for the frontal surface of a body, the pressure distribution over which is satisfactorily described by Newtonian theory. Examples are given of the calculation of the change of an initially spherical body under laminar and turbulent heat-transfer conditions, leading to the decomposition of the body. It is stated that in time, the shape begins to assume the well-known shape of the steady heat

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L 65047-65

ACCESSION NR: AP5021710   O

fluxes with an angle of about 35—40°. This is compared with data
on the final shape of recovered meteorites, many of which have a reg-
ular conical shape with a cone half-angle of about 45—55°. The
author remarks on the interesting fact that in the decomposition pro-
cess the shape of a body is automatically established and corresponds
to the maximum of heat fluxes. Orig. art. has: 25 formulas and
4 figures.   [LB]

ASSOCIATION: none

SUBMITTED: 26Aug64   ENCL: 00   SUB CODE: ME, TO

NO REF SOV: 003   OTHER: 001   ATD PRESS: 4084

Card   2/2

L 7055-66   EWT(1)/EWP(m)/PCS(k)   WW

ACC NR: AP5026697   SOURCE CODE: UR/0258/65/005/005/0971/0972

AUTHOR: Dem'yanov, Yu. A. (Moscow); Murzinov, I. N. (Moscow)

ORG: None

TITLE: Boundary layer laws deduced from an approximation of the viscosity of air dissociating under equilibrium conditions

SOURCE: Inzhenernyy zhurnal, v. 5, no. 5, 1965, 971-972

TOPIC TAGS: boundary layer theory, Prandtl number, enthalphy, ideal gas, thermodynamics

ABSTRACT: It has been shown that in the investigation of the boundary layer of a gas on a plate, with a constant Prandtl number and viscosity law,

$$\frac{\mu \rho}{\mu_\infty \rho_\infty} = \left(\frac{i}{i_\infty}\right)^{n-1} \qquad (1)$$

it is possible to use solutions obtained for the boundary layer of an ideal gas with

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ACC NR: AP5026697

a viscosity law

$$\frac{\mu}{\mu_\infty} = \left(\frac{T}{T_\infty}\right)^a \cdot \qquad (2)$$

Here rho is the density; mu is the viscosity; T is the temperature; and i is the enthalphy of the gas. From literature data, the following approximation is derived:

$$\mu/p = Ci^{(n-1)}. \qquad (3)$$

This approximation represents well the law governing the change in viscosity over a pressure range from 0.001 to 100 atm and an enthalphy less than approximately 10,000 kcal/kg. Such enthalpies correspond to the stagnation enthalpies with movement through the atmosphere at speeds, V, less than approximately 10 km/sec. The equations of the boundary layer for air dissociating under equilibrium conditions are analogous to the equations for an ideal gas, if the temperatures are expressed in terms of the enthalphy. On these assumptions, the article derives an equation of the following form for air dissociating under equilibrium con-

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ditions:

$$\sigma_i \sqrt{Nu_m} = 0.654 \left[0.45 + 0.55 \frac{t_0}{t_c} + 0.08 \frac{u_0^2}{t_c} \sqrt{Fr} \right]^{-\frac{1-n}{6}}.$$

Orig. art. has: 4 formulas and 1 figure

SUB CODE: ME/ SUBM DATE: 14Jan65/ ORIG REF: 002/ OTH REF: 003

Card 3/3

AUTHOR: Murzinov, I. N. (Moscow)

ORG: none

TITLE: Laminar boundary layer on a sphere in hypersonic air flow with equilibrium dissociation

TOPIC TAGS: hypersonic aerodynamics, hypersonic flow, equilibrium dissociation, laminar boundary layer, heat transfer, entropy, boundary layer

ABSTRACT: A method is described for calculating the distribution of heat fluxes on a sphere in hypersonic air flow in the presence of equilibrium dissociation. It is assumed that the entropy at the outer edge of the boundary layer is constant and equal to the entropy of gas passed through a normal compression shock. The solution of the boundary layer equations is obtained by an iterative method. The results of numerical calculations show good convergence of the iteration process. The outer boundary of the layer was determined from the condition of a smooth junction with the inviscid flow. The distributions of the heat fluxes on a sphere for some values of i_w (gas enthalpy on the wall) at $V_\infty = 7500$ m/sec and for different flight velocities ($V_\infty = 4000$ m/sec, 6000 m/sec, and 7500 m/sec) plotted in graphs show that the distribution is nearly insensitive to different values of enthalpy, does not

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L 24736-66
ACC NR: AP6013228

depend on the velocity of motion, and that varying the flight altitude with the same velocities has no effect on distribution. The results also show that the distribution of heat fluxes obeys the law of hypersonic stabilization. Orig. art. has: 3 figures and 16 formulas.

[AB]

SUB CODE: 20/   SUBM DATE: 08Jun65/   ORIG REF: 008/   OTH REF: 003

Card 2/2

ACC NR: AP7001581   (A)   SOURCE CODE: UR/0421/66/000/006/0124/0129

AUTHOR: Murzinov, I. N. (Moscow)

ORG: none

TITLE: Laminar boundary layer on blunted bodies with vorticity in the external flow taken into account

SOURCE: AN SSSR. Izvestiya. Mekhanika zhidkosti i gaza, no. 6, 1966, 124-129

TOPIC TAGS: hypersonic aerodynamics, laminar bounda.y layer, vorticity, heat transfer, skin friction, enthalpy, entropy, shock wave

ABSTRACT: A method is outlined for calculating the hypersonic, laminar, boundary layer on nose-blunted cones, accounting for external vorticity generated by a curved bow shock wave. It is assumed that the air in the boundary layer is in equilibrium dissociation and that the Prandtl number is constant and equal to 0.72. Numerical calculations were carried out for spherically blunted cones of semiapex angles θ = 0 to 20° for velocities ranging from 3 to 8 km/sec, and Reynolds numbers from 2.5×10^3 to 5×10^4 calculated with respect to the parameters of free flow and radius of the bluntness. The dependence of the velocity and enthalpy upon the pressure distribution along the cone surface are approximately established. The nature of the influence of the adiabatic index γ on vorticity interaction in the flow past blunted cones was analyzed and it was found that the vorticity increases

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ACC NR: AP7001581

with decreasing γ, though at the same time, the average vorticity across the boundary layer thickness remains constant. The effects of the Reynolds number and semiapex angle upon vorticity are illustrated in graphs. The enthalpy profiles calculated for the cases of 1) inviscid flow, 2) asymptotic boundary layer, and 3) boundary layer with vorticity taken into account (presented in a graph) show that the profile in an asymptotic boundary layer differs substantially from an enthalpy profile with external vorticity, while the latter matches smoothly with an enthalpy profile in inviscid flow. The results also show that the effect of vorticity is maximum at the stagnation point, then vanishes to zero at the junction of the sphere and cone and increases along the generatrix of the cone. The ratios of heat transfers and skin frictions at large X calculated with and without the effect of vorticity tend to constant values which depend on the entropy of the gas behind straight and conical shock waves. Orig. art. has: 7 figures and 12 formulas.

[AB]

SUB CODE: 20/ SUBM DATE: 05Apr66/ ORIG REF: 006/ OTH REF: 003/ ATD PRESS: 5110

Card   2/2

ACCESSION NR: AP4043900   S/0179/64/000/004/0148/0150

AUTHOR: Kurzinov, I. N. (Moscow)

TITLE: Temperature profiles in bodies traveling at high altitudes at hypersonic speed

SOURCE: AN SSSR. Izvestiya. Mekhanika i mashinostroyeniye, no. 4, 1964, 148-150

TOPIC TAGS: heat exchange, reentry, hypersonic speed, temperature profile, thermal radiation, turbulent flow, laminar flow

ABSTRACT: Solutions have been derived for temperature profiles in rods which are semifinite and heat insulated at one end and have constant thermophysical characteristics under heat exchange laws that are typical for bodies entering the atmosphere at great supersonic speed. In the first approximation, radiation heat exchange at the end of the rod is ignored. In the second approximation, the energy radiated by the body under boundary conditions is considered according to the results obtained from the first approximation. The time for which the approximations obtained hold true has been estimated. Orig. art. has: 1 figure and 11 formulae.
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ACCESSION NR: AP4043900

ASSOCIATION: none

SUBMITTED: 16Mar64   ATD PRESS: 3091   ENCL: 00

SUB CODE: SV, TD   NO REF SOV: 002   OTHER: 000

Card 2/2

LESHCHENKO, A.S.; MURZINOV, V.Ye.; TALOVEROV, V.L.; KHRAMOV, V.I.;
    KOZ'MINA, N., red.; SUKHAREVSKAYA, N., tekhn. red.

[Your houehold appliances]Tvoia domashniaia tekhnika. [n.p.]
Luganskoe obl. izd-vo, 1960. 150 p.   (MIRA 15:7)
                     (Household appliances)

MURZINOV, Yuriy Andreyevich; MARTYNOV, N.V., red.; GALAKTIONOVA, Ye.N.,
        tekhn.red.; NIKOLAYEVA, L.N., tekhn.red.

[Progressive practices of scraper operator A.F.Sukharev] Pere-
dovoi opyt skreperista A.F.Sukhareva. Moskva, Nauchno-tekhn.
izd-vo M-va avtomobil'nogo transp. i shosseinykh dorog RSFSR,
1960. 31 p.   (MIRA 13:9)
                        (Scrapers)

CHUMAKOV, Yu.I.; Prinimala uchastiye: MIRZINOVA, Z.N.

1-Benzylpyridine. Metod. poluch. khim. reak 1 preparatov;

35-36 '64.

1. Kiyevskiy politekhnicheskiy institut.

CHUMAKOV, Yu.I.; MURZINOVA, Z.N.

Cetyl pyridinium chloride. Metod. poluch. khim. reak. i prepar.
no.11;105-107 '64.   (MIRA 18:12)

1. Kiyevskiy politekhnicheskiy institut. Submitted April 1964.

MURZINTSEVA, N.

You have to do it in order to have peace. Okhr.truda i sots.
strakh.   no.5:35-39 My '59.   (MIRA 12:9)

1. Predsedatel' zavkoma profsoyuza Altayskogo motornogo zavoda.
    (Altai Territory--Machinery industry--Hygienic aspects)

MURZNOWSKI, W.: WISZNIOWSKI, K.

MURZNOWSKI, W.: WISZNIOWSKI, K.   Prospects of utilizing coal derivatives.
                                    p. 319

Vol 9, no. 11, Nov. 1956
ACTA PHYSICOLOGICA POLONICA
SCIENCE
Warszawa, Poland

So: East European accession vol 6, no. 3, March 1957

MURZOV, A. I.

Murzov, A. I., and A. A. Dmitriyev. Die Rolling of Blanks for
       Turbine Blades   p. 25

Pressure Treatment of Alloys; Collection of Articles, Moscow, Oborongiz, 1958, 141pp.

SOV/137-58-9-18977

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 118 (USSR)

AUTHOR: Murzov, A. I.

TITLE: Rolling Sheet of Variable Cross Section (Prokatka listov pere-
mennogo secheniya)

PERIODICAL.   V sb.: Legkiye splavy. Nr 1. Moscow, 1958, pp 453-457

ABSTRACT: A brief description is offered of methods of producing sec-
tions of variable and periodically repeated cross section in
longitudinal rolling (R) and drawing. A description is pre-
sented of the production of a variable thickness of R product in
a four-high mill by forced rotation of the lower eccentric back-
up shaft (ES). The eccentricity of the ES having a 680 mm
diameter is 1.5 mm. The diameter of the working rolls is 275
mm and the length of the body 910 mm. The power of the main
motor is 125 kw. Individual drive of the ES through a worm
reduction gear and a variable-ratio transmission was effected
by a supplementary motor of 60 kw power, in which n= 960 rpm,
making it possible to obtain a large number of variants of
lengthwise taper of the finished sheets. The mutual slippage
of the ES and the bottom working roll arising at various speeds

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Rolling Sheet of Variable Cross Section

is eliminated by the use of a textolite bearing inserted between them. A
check of the geometry of the finished rolled D16 alloy, 3-1.5 mm and 3-0.5
mm in thickness, the width of the sheet being 100-700 mm and the length 3.5
m, showed it to be highly precise; the decrease in thickness is in linear
ratio to the length of the strip. Data are adduced on the difference in thick-
ness across the width of the sheet, and on the mechanical qualities of the
finished rolled products. When compared with the method of obtaining R of
varying cross section by changing the clearance between the rolls by the use
of screwdowns, the method here described enjoys the following advantages:
1) rolled metal of varying or constant profile may be produced to high accu-
racy; 2) an eccentric may be installed on existing mills without any remod-
eling of mill assemblies whatever; 3) interchangeability of tooling permit-
ting taper of 0.1= 200 mm/m; 4) compactness and simplicity of the assembly
and low wear of the tooling.

V.M.

1. Rolling mills--Performance   2. Rolling mills--Equipment   3. Rolling mills
--Design

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85029
S/133/60/000/009/007/0:5
A054/A029

18.5100

AUTHOR: Murzov, A.I., Candidate of Technical Sciences

TITLE: Rolling With a Higher Degree of Reduction

PERIODICAL: Stal', 1960, No. 9, pp. 824-826

TEXT: The output of rolling mills depends on the extent of mechanization and automation of the rolling process, the speed of rolling and the degree of reduction obtained during one pass. Although I.L. Perlin (Ref. 1), I.M. Pavlov (Ref. 2), A.P. Chekmarev (Ref. 3), I.Ya. Tarnovskiy (Ref. 4), T.M. Golubev, B.P. Bakhtinov (Ref. 5), A.I. Murzov and other scientists described the possibility of rolling with a higher degree of reduction, no practical hints were given in the works referred to. The author designed special rolling mills for the investigation of this problem on a semi-industrial scale. In order to attain the required approximation of the rolls during the rolling process, either a mill with double rolls and with excentric sleeves, (Fig. 1), or with excentric shaft (Fig. 2), or a four-roll rolling mill stand with a lower excentric shaft (Fig. 3) should be used. For the control of the speed of pressing of the rolls a variable speed gear or a motor with a variable number of revolutions will have to be applied. During the tests made with various kinds of ingots and pro-

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A054/A029

Rolling With a Higher Degree of Reduction

ducts, the angle of bite, the overall and the specific pressure of the metal
on the rolls and the power consumption were examined. The dependence of the
overall and the specific pressure on the magnitude of reduction for rolling
when the angle of bite is greater than the angle of friction showed that over-
all pressure only increased up to a certain limit, while it did not change when
the rate of reduction was raised further. When rolling products of 45 type
steel with a 65 x 65 mm section, it was found that beyond reductions of 46.7 %
the total pressure of the metal remained unchanged. The specific pressure at-
tained its maximum at a reduction of 35 % and had a minimum value (5 kg/mm^2) at
a reduction of 77 %. These phenomena can be explained by the decrease in the
flow limit in connection with the softening of the intercrystalline lattice
and the formation of high expanding stresses in the center of the origin of de-
formation. The limits of the biting angles and the maximum possible rate of
reduction depended on the chemical-physical properties of the material rolled
Applying the new method to an aluminum alloy, AMЦ , (AMTs) 50°, to steel 45,
36.5°, to copper 38° and to alloys Д 16 (D16) and B95 (V95) 45° were obtained
as maximum values. Thus the tests proved that when pressing the rolls during
rolling on the excentric rolling mill, the output of the machine could be con-
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A054/A029

Rolling With a Higher Degree of Reduction

siderably increased by the utilization of the reserve frictional power, further-
more, that blocks and products of elastic aluminum alloys, steel and copper
could be reduced to an increased extent without affecting the continuity of the
material and without any deterioration of its mechanical properties. There are
6 figures and 7 Soviet references.

X

Card 3/3

MURZOV, A I   2-0

PHASE I BOOK EXPLOITATION   SOV/5685

Fridlyander, I. N., Doctor of Technical Sciences, and B. I.
Matveyev, Candidate of Technical Sciences, eds.

Teploprochnyy material iz spechennoy alyuminiyevoy pudry [SAP]; sbornik
statey (Heat-Resistant Material From Baked Aluminum Powder
[SAP]; Collection of Articles) Moscow, Oborongiz, 1961. 122 p.
Errata slip inserted. 3,550 copies printed.

Reviewers: M. F. Bazhenov, Engineer, and M. Yu. Bal'shin,
Candidate of Technical Sciences; Ed.: M. A. Bochvar, Engineer;
Ed. of Publishing House: S. I. Vinogradskaya; Tech. Ed.:
V. I. Oreshkina; Managing Ed.: A. S. Zaymovskaya, Engineer.

PURPOSE : This collection of articles is intended for scientific
workers and engineers in the institute and plant laboratories
of the metallurgical and machine-building industry; it may also
be useful to instructors and advanced students.

COVERAGE: The 12 articles contain the results of research on the
structure, properties,and manufacture of semifinished products
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Heat-Resistant Material From (Cont.)   SOV/5685

from sintered aluminum powder. The technology for the manu-
facture of aluminum powder and briquets is described as are
sintering processes, and pressing, rolling, drawing, and
sheet-stamping methods. The dependence of the properties of
semifinished products on the aluminum-oxide content of the
powder, on the degree of hot and cold deformation, and on the
stresses of pressing is investigated. Also investigated are
the mechanical and corrosive properties of semifinished pro-
ducts, the mechanism of hardening of sintered aluminum powder,
the reasons for blister formation, and the possibility of
recrystallization. Data on sintered aluminum alloys are included.
No personalities are mentioned. References in the form of
footnotes accompany the articles.

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and Properties of Pressed Articles From SAP [Sintered Aluminum
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Stepanova, M. G., G. P. Zenkov, Ye. M. Lekarenko, and L. A.
Sarul'. Aluminum Powder for SAP   17
    The work was carried out with the participation of G. N.
    Pokrovskaya, Chief of TsZL; R. V. Nesterenko, Acting
    Chief of the Shop; and Engineers L. I. Kibitova, N. D.
    Chumak, and N. I. Kolobnev.

Matveyev, B. I., M. G. Stepanova, and N. I. Kolobnev. Effect
of Specific Pressure In Pressing on Properties of Semifinish-
ed Products From SAP   30

Matveyev, B. I., S. I. Nomofilov, and V. A. Shelamov. Press-
ing of Semifinished Products From SAP   36
    The work was carried out with the participation of Engi-
    neers A. V. Fedotova and I. R. Khanova, and Senior Tech-
    nician L. S. Perevyazkin.

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Heat-Resistant Material From (Cont.)   SOV/5685

Murzov, A. I. [Candidate of Technical Sciences], S. I. Nomofilov [Engineer], and V. A. Shelamov [Engineer]. Rolling of Sheets From SAP   50
    The work was carried out with the participation of Engineer R. F. Filimonova and Technicians V. I. Sverlov and O. A. Kolosov.

Matveyev, B. I., N. A. Davydova, and I. R. Khanova. Study of the Effect of the Degree of Deformation on the Properties and Structure of Pressed Semifinished Products and Cold-Rolled Sheets From SAP   59
    The work was carried out with the participation of L. S. Perevyazkin and O. A. Kolosov.

Davydov, Yu. P., and G. V. Pokrovskiy. Stamping of Sheets From SAP   66

Litvintsev, A. I., and E. P. Belova. X-Ray Diffraction Study of the Oxide Phase in SAP   77

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L 4175-66   EWT(m)/EPF(c)/EWP(t)/EWP(b)/EWA(c)   IJP(c)   JD/HW/WB

ACC NR: AP5024406   SOURCE CODE: UR/0286/65/000/015/0083/0084

INVENTOR: Kulakov, V. I.; Matveyev, A. I.; Istrin, M. A.; Murzov, A. I.; Fridlyander, I. N.; Bazhenov, M. F.; Belyanskiy, A. A.; Anan'in, S. N.

ORG: none

TITLE: Wrought, aluminum-base alloy. Class 40, No. 173419

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 15, 1965, 83-84

TOPIC TAGS: alloy, aluminum base alloy, copper containing alloy, magnesium containing alloy, silicon containing alloy, zinc containing alloy, manganese containing alloy, iron containing alloy, nickel containing alloy, titanium containing alloy, chromium containing alloy, zirconium containing alloy, beryllium containing alloy

ABSTRACT: This Author Certificate introduces a wrought, aluminum-base alloy with high mechanical properties, corrosion resistance, and workability. The alloy contains 1.8—3% copper, 1.2—2% magnesium, 1.0—1.8% silicon, 3.5—6.0% zinc, 0.1—0.6% manganese, 0.9% max iron, 0.1% max nickel, 0.01—0.2% titanium, 0.05—0.2% chromium, 0.01—0.1% zirconium, and 0.0001—0.001% beryllium.   [AZ]

SUB CODE: MM/ SUBM DATE: 27Jan64/ ORIG REF: 000/ OTH REF: 000/ ATD PRESS: 4/21

Card 1/1 /r/h   UDC: 669.715.018.8

KOZLOVA, Olimpiada Vasil'yevna; MURZOV, Konstantin Ivanovich; MAKSIMOV,
     I.S., red.; PONOMAREVA, A.A., tekhn.red.

[How automation benefits the socialist society] Chto daet avto-
matizatsiia sotsialisticheskomu obshchestvu. Moskva, Gosplanizdat,
1960. 126 p.   (MIRA 13:7)
                      (Automation)